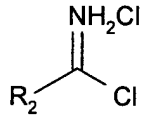
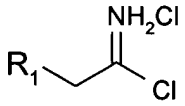
CLAIMS

1. A method of synthesizing 4,6-dichloropyrimidine, 5-substituted-4,6-dichloro-pyrimidines, 4-chloro-6-hydroxypyrimidine, or 5-substituted-4-chloro-6-hydroxy-pyrimidines, said method comprising reacting a first imidoyl chloride compound represented by the formula:



wherein R_2 is hydrogen or a substituent which can be converted to hydrogen, and a second imidoyl chloride compound which has two alpha hydrogens represented by the formula:



wherein R_1 is selected from hydrogen and a C_1-C_{12} hydrocarbyl group, with phosgene or a compound that can substitute for phosgene.

2. The method of claim 1, wherein R_1 is hydrogen.

3. The method of claim 1, wherein R_1 is a C_1-C_3 alkyl group.

4. The method of claim 1, wherein R_1 is methyl.

5. The method of claim 1, wherein R_2 is hydrogen.

6. The method of claim 1, wherein R_2 is C_{1-4} alkoxycarbonyl, C_{1-4} alkoxysulfinyl, trimethylsilyl or a group –C(OH)R′R″ wherein R′ and R″ are independently hydrogen, C_{1-4} alkyl or phenyl.

7. The method of claim 1, wherein R_2 is ethoxycarbonyl.

8. The method of claim 1, wherein the first and second imidoyl chloride compounds are reacted with phosgene.

9. The method of claim 1, wherein the first and second imidoyl chloride compounds are reacted with diphosgene, triphosgene or oxalyl chloride.

10. The method of claim 1, further comprising synthesizing said first imidoyl chloride compound and said second imidoyl chloride compound, provided that one of the imidoyl compounds has 2 alpha hydrogens, by reaction of:
a) at least one organic amide of structure R-$CONH_2$ with phosgene or a compound that can substitute for phosgene, or
b) at least one organic nitrile of structure R-CN with hydrogen chloride, or
c) both at least one organic amide of structure R-$CONH_2$ with phosgene or a compound that can substitute for phosgene and at least one organic nitrile of structure R-CN with hydrogen chloride; wherein each R group is, independently, hydrogen or a group which can be converted to hydrogen or a C_1 - C_{12} hydrocarbyl group.

11. The method of claim 10, wherein said group R is a substituted or unsubstituted, linear or branched alkyl group.

12. The method of claim 10, wherein one organic nitrile is butyronitrile.

13. The method of claim 10, wherein one organic nitrile is acetonitrile.

14. The method of claim 10, wherein said first imidoyl chloride compound is synthesized by reacting formamide with phosgene, and said second imidoyl chloride compound is synthesized by reacting acetamide with phosgene.

15. The method of claim 10, wherein said first imidoyl chloride compound is synthesized by reacting hydrogen cyanide with hydrogen chloride, and said second imidoyl chloride compound is synthesized by reacting acetonitrile with hydrogen chloride.

16. The method of claim 10, wherein said first imidoyl chloride compound is synthesized by reacting formamide with phosgene, and said second imidoyl chloride compound is synthesized by reacting acetonitrile with hydrogen chloride.

17. The method of claim 10, wherein said first imidoyl chloride compound is synthesized by reacting formamide with phosgene, and said second imidoyl chloride compound is synthesized by reacting butyronitrile with hydrogen chloride.

18. The method of claim 10, wherein the process is carried out in an inert organic solvent.

19. The method of claim 10, wherein the process is carried out in an excess of nitrile.

20. The method of claim 10, wherein the process is carried out in an excess of phosgene.

21. The method of claim 10, wherein the process is carried out in an excess of amide.

22. The method of claim 10, wherein the process is carried out in stages with the formation of imidoyl chlorides, either separately or as a mixture, being done and then a mixture of the imidoyl chlorides is treated with phosgene to generate the products.

23. The method of claim 10, wherein the process is carried out in one stage with the formation of imidoyl chlorides being done concurrently with treatment by phosgene to generate the products.

24. The method of claim 10, wherein the process is carried out with continuous feed of raw materials into a reactor system and outflow and recovery of product.

25. The method of claim 10, wherein the process is carried out in batches with discreet steps for charging raw materials and recovery of product.

26. The method of claim 10, wherein the process is carried out at 0°C to 300°C.

27. The method of claim 10, wherein the process is carried out at 60°C to 160°C.

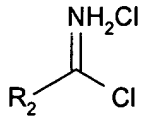
28. The method of claim 10, wherein the process is carried out at 80°C to 130°C.

29. The method of claim 10, wherein the process is carried out at pressures of 0 to 800 psig.

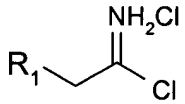
30. The method of claim 10, wherein the process is carried out at pressures of 100 to 300 psig.

31. The method of claim 10, wherein the process is carried out at pressures of 150 to 250 psig.

32. A method of synthesizing 4,6-dichloropyrimidine, 5-substituted-4,6-dichloro-pyrimidines, 4-chloro-6-hydroxypyrimidine, or 5-substituted-4-chloro-6-hydroxy-pyrimidines, said method comprising reacting a first imidoyl chloride compound represented by the formula:



wherein R_2 is a substituent which can be converted to hydrogen, and a second imidoyl chloride compound which has two alpha hydrogens represented by the formula:



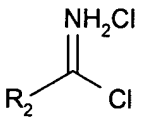
wherein R_1 is selected from hydrogen and a C_1-C_{12} hydrocarbyl group, with phosgene or a compound that can substitute for phosgene.

33. The method of claim 32, wherein R_2 is C_{1-4} alkoxycarbonyl, C_{1-4} alkoxysulfinyl, trimethylsilyl or a group –C(OH)R′R″ wherein R′ and R″ are independently hydrogen, C_{1-4} alkyl or phenyl.

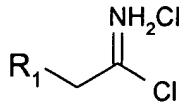
34. The method of claim 32, wherein R_2 is C_{1-4} alkoxycarbonyl or C_{1-4} alkoxysulfinyl.

35. The method of claim 32, wherein R_2 is ethoxycarbonyl.

36. A method of synthesizing 4,6-dichloropyrimidine, 5-substituted-4,6-dichloro-pyrimidines, 4-chloro-6-hydroxypyrimidine, or 5-substituted-4-chloro-6-hydroxy-pyrimidines, said method comprising reacting a first imidoyl chloride compound represented by the formula:



wherein R_2 is hydrogen or a substituent which can be converted to hydrogen, and a second imidoyl chloride compound which has two alpha hydrogens represented by the formula:



wherein R_1 is selected from hydrogen and a C_1-C_{12} hydrocarbyl group, with a compound that can substitute for phosgene.

37. The method of claim 36, wherein the first and second imidoyl chloride compounds are reacted with oxalyl chloride.

38. The method of claim 36, wherein the first and second imidoyl chloride compounds are reacted with diphosgene or triphosgene.